



U.S. Serial No. D8/374,645
FILED April 27, 1995
MINAUGHT ET AL
vs. IRODA

Patent Office
Canberra

I, DAVID DANIEL CLARKE, ASSISTANT DIRECTOR PATENT SERVICES,
hereby certify that the annexed are true copies of the Provisional specification and
drawing(s) as filed on 12 February 1993 in connection with Application No. PL 7266
for a patent by GOODMAN FIELDER WATTIE LIMITED filed on
12 February 1993.



WITNESS my hand this Eighteenth
day of February 1997


DAVID DANIEL CLARKE
ASSISTANT DIRECTOR PATENT SERVICES



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

08/074645

US APPLICATION NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
08/374,645	MCNAUGHT	K 1451-007PCT

5611

ROBERT L. PRICE
LOWE, PRICE, LEBLANC & BECKER
99 CANAL CENTER PLAZA, SUITE 300
ALEXANDRIA, VIRGINIA 22314

INTERNATIONAL APPLICATION NO.

PCT/US93/00389

FILING DATE

07/30/93

PRIORITY DATE

07/31/92

05/22/95

DATE MAILED

NOTIFICATION OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C. 371
AND 37 CFR 1.494 OR 1.495

1. The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as ☐ a Designated Office (37 CFR 1.494), ☒ an Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is ACCEPTED for national patentability examination in the United States Patent and Trademark Office.

2. The United States Application Number assigned to the application is shown above and the relevant dates are:

27 APR 1995

35 U.S.C. 102(e) DATE

27 APR 1995

DATE OF RECEIPT OF
35 U.S.C. 371 REQUIREMENTS

3. ☒ A request for immediate examination under 35 U.S.C. 371(f) was received on 31 JAN 1995 and the application will be examined in turn.

4. The following items have been received:

☒ U.S. Basic National Fee.

☒ Copy of the international application in:

☐ non-English language.

☒ English.

☐ Translation of the international application into English.

☒ Oath or Declaration of inventor(s) for DO/EO/US.

☐ Copy of Article 19 amendments. ☐ Translation of Article 19 amendments into English.

The Article 19 amendments ☐ have ☐ have not been entered.

☒ The International Preliminary Examination Report in English and its Annexes, if any.

☐ Translation of Annexes to the International Preliminary Examination Report into English.

The Annexes ☒ have ☐ have not been entered.

☒ Preliminary amendment(s) filed 31 JAN 1995 and

☒ Information Disclosure Statement(s) filed 31 JAN 1995 and

☒ Assignment document (4)

☐ Power of Attorney and/or Change of Address.

☐ Substitute specification filed

☐ Verified Statement Claiming Small Entity Status.

☒ Priority Document (2)

☒ Copy of the Search Report ☒ and copies of the references cited therein.

☐ Other:

A Filing Receipt (PTO-103X) will be issued for the present application in due course. Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

Applicant is reminded that any communication to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above. (37 CFR 1.5)

Michelle Reed Mosley
Patent Specialist

Telephone: (703)

U.S. Appl. No. 08/3746

DO/US WORKSHEET

International App. No. AUG 3/02389Application filed by: ☐ 20 months ☒ 30 months

INTERNATIONAL APPLICATION PAPERS IN THE APPLICATION FILE:

- | | |
|---|---|
| <input checked="" type="checkbox"/> International application (RECORD COPY) | <input type="checkbox"/> Request form PCT/RO/101 |
| <input checked="" type="checkbox"/> Article 19 amendments | <input type="checkbox"/> PCT/IB/302 |
| <input checked="" type="checkbox"/> PCT/IB/331 | <input checked="" type="checkbox"/> PCT/ISA/210-Search Report <u>AM</u> |
| <input checked="" type="checkbox"/> PCT/IPEA/409 IPER (PCT/IPEA/416 on front) | <input type="checkbox"/> Search Report references |
| <input checked="" type="checkbox"/> Annexes to 409 | <input type="checkbox"/> Other <u>389, 310</u> |
| <input checked="" type="checkbox"/> Priority document(s) No. <u>2</u> | |

☐ INTERNATIONAL APPLICATION ON DOUBLE SIDED PAPER (COPIES MADE)

RECEIPTS FROM THE APPLICANT: (other than checked above)

- | | |
|---|--|
| <input checked="" type="checkbox"/> Basic National Fee (paid or authorized to charge) | <input type="checkbox"/> Preliminary amendment(s) filed |
| Translation of international application as filed: | |
| <input type="checkbox"/> Description | <input checked="" type="checkbox"/> Information Disclosure Statement |
| <input type="checkbox"/> Claims | <input checked="" type="checkbox"/> Assignment document |
| <input type="checkbox"/> Words in the drawing figure(s) | <input type="checkbox"/> Power of attorney/Change of address |
| <input type="checkbox"/> Article 19 amendments | <input type="checkbox"/> Substitute specification |
| <input type="checkbox"/> Annexes to 409 | <input type="checkbox"/> Verified small status claim |
| <input checked="" type="checkbox"/> Oath / Declaration | <input type="checkbox"/> Other |
| <input type="checkbox"/> DNA diskette | |

Notes:

35 U.S.C. 371 - Receipt of Request (PTO-1390) X 31 Jan 95

Date acceptable oath / declaration received

27 APR 1995

Date complete 35 U.S.C 371 requirements met

27 APR 1995

102(e) Date

27 APR 1995

Date of completion of DO/EO 906 - Notification of Missing 102(e) Requirements

Date of completion of DO/EO 907 - Notification of Acceptance for 102(e) date

Date of completion of DO/EO 911 - Application accepted under 35 U.S.C. 1.11

Date of completion of DO/EO 905 - Notification of Missing Requirements 27 FEB 95

Date of completion of DO/EO 916 - Notification of Defective Response

Date of completion of DO/EO 903 - Notification of Acceptance 17 MAY 95

Date of completion of DO/EO 909 - Notification of Abandonment

WIPO Publication

Publication No.

WO 94/03049

Publication Date

17 Feb 94

Publication Language

ENG

Not Published

☐ U.S. only

Designated

☐ EP request

Screening done by:

Michelle Reed Moseley
Paralegal Specialist

08/374645

31 JAN 1995

Attorney Docket: 1451-007PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Kenneth J. McNAUGHT et al.

Int'l Appln. No.
PCT/AU93/00389

Int'l Filing Date:
July 30, 1993

For: HIGH AMYLOSE STARCH AND
RESISTANT STARCH FRACTIONS

BOX PCT

Paper
No. 5

PRELIMINARY AMENDMENT

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Preliminary to examination of the above-referenced
application, please amend the application as follows:

IN THE CLAIMS

Claim 4, line 1 change "any one of claims 1 to 3" to --claim
3--.

Claim 16, line 7 after "starch" add --prior to
fractionation--.

Claim 18, line 1 delete "claim 16 or".

Claim 20, line 1 change "any one of claims 16 to 20" to --
claim 16--.

Claim 21, line 1 change "any one of claims 16 to 20" to --
claim 17--.

Claim 21, line 5 change "starches" to --starch prior to
fractionation--.

Claim 22, line 1 change "any one of claims 16 to 21" to --
claim 16--.


Claim 23, line 2 change "any one of claims 16 to 22" to --
claim 16--.

REMARKS

The above-referenced application is amended to reflect changes made in the Amendment under PCT Article 34 as well as delete the multiple dependency of claims 4, 18, and 20-23 to avoid the multiple dependent claim filing fee.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER



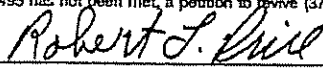
Robert L. Price
Registration No. 22,685

99 Canal Center Plaza
Suite 300
Alexandria, VA 22314
(703) 684-1111
January 31, 1995

Rec'd PCT/PCT 21 JAN 1995

/374645

FORM PTO-1290 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		141 /PCT
U.S. APPLIC. NO. (if known, see 37 CFR 1.5)		
INTERNATIONAL APPLICATION NO. PCT/AU93/00389	INTERNATIONAL FILING DATE July 30, 1993	PRIORITY DATE CLAIMED July 31, 1992
TITLE OF INVENTION HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS		
APPLICANT(S) FOR DO/EO/US Kenneth J. McNAUGHT, Eric MALDNEY, Ian L. BROWN and Adrian Timothy KNIGHT		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
1.	<input checked="" type="checkbox"/>	This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2.	<input type="checkbox"/>	This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3.	<input checked="" type="checkbox"/>	This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4.	<input type="checkbox"/>	A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5.	<input checked="" type="checkbox"/>	A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US)
6.	<input type="checkbox"/>	A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7.	<input type="checkbox"/>	Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendment has NOT expired. d. <input type="checkbox"/> have not been made and will not be made.
8.	<input type="checkbox"/>	A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9.	<input type="checkbox"/>	An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10.	<input type="checkbox"/>	Annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
Items 11. to 16. below concern other document(s) or information included:		
11.	<input checked="" type="checkbox"/>	An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12.	<input type="checkbox"/>	An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13.	<input checked="" type="checkbox"/>	A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.
14.	<input type="checkbox"/>	A substitute specification.
15.	<input type="checkbox"/>	A change of power of attorney and/or address letter.
16.	<input type="checkbox"/>	Other items or information.

U.S. APPLIC. NO. (if known, see 37 CFR 1.50)		INTERNATIONAL APPLICATION NO. CT/AU93/00389		INVENTOR'S DOCKET NUMBER 14 37PCT	
				CALCULATIONS	PTO USE ONLY
17. <input checked="" type="checkbox"/> The following fees are submitted:					
Basic National Fee (37 CFR 1.492(a)(1)-(5)):					
Search Report has been prepared by the EPO or JPO				\$850.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482)				\$660.00	
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))				\$730.00	
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO				\$980.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)				\$92.00	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 980.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 130.00	
Claims	Number Filed	Number Extra	Rate		
Total Claims	23 -20 =	3	x \$22.00	\$ 66.00	
Independent Claims	4 -3 =	1	x \$76.00	\$ 76.00	
Multiple dependent claim(s) (if applicable)				+ \$240.00	\$ 0.00
TOTAL OF ABOVE CALCULATIONS =				\$ 1,252.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$	
SUBTOTAL =				\$ 1,252.00	
Processing fee of \$130.00 for furnishing the English translation later than the <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 0.00	
TOTAL NATIONAL FEE =				\$ 1,252.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$ 0.00	
TOTAL FEES ENCLOSED =				\$ 1,252.00	
				Amount to be: refunded	\$
				charged	\$
a. <input type="checkbox"/> A check in the amount of \$ to cover the above fees is enclosed. b. <input checked="" type="checkbox"/> Please charge my Deposit Account No. <u>12-2237</u> in the amount of \$ <u>1,252.00</u> to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>12-2237</u> . A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
Robert L. Price LOWE, PRICE, LEBLANC & BECKER 99 Canal Center Plaza, Suite 300 Alexandria, VA 22314 (703) 684-1111			SIGNATURE  Robert L. Price NAME 22,685 REGISTRATION NUMBER January 31, 1995 DATE		

BASED ON FORM PTO-1390 (Rev. 5-83)



Attorney Docket: 1451-007PCT

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Application of:

Kenneth J. McNAUGHT et al

Serial No. 08/374,645

Filed: April 27, 1995

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Group Art Unit: 1804

Examiner:

REQUEST FOR CORRECTED FILING RECEIPT

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Attached is a copy of the Filing Receipt received from the U.S. Patent and Trademark Office in the above-referenced application. Also attached is a copy of the Declaration, Power of Attorney and Petition. The second inventor's last name, is spelled incorrectly. It is requested that a corrected filing receipt be issued.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER

Robert L. Price
Registration No. 22,685

99 Canal Center Plaza
Suite 300
Alexandria, VA 22314
(703) 684-1111 RLP:gah
July 18, 1995

PTO-103X
(Rev. 7-93)

FILING RECEIPT



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO./DRAWING	TOT CL	IND CL
08/374,645	04/27/95	1804	\$1,252.00	LOWE PRICE, LeBlanc & Becker	3	4

LOWE PRICE LEBLANC & BECKER
99 CANAL CENTER PLAZA SUITE 300
ALEXANDRIA VA 22314

RECEIVED
JUL 11 1995

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Application Processing Division's Customer Correction Branch within 10 days of receipt. Please provide a copy of the Filing Receipt with the changes noted thereon.

Applicant(s)

KENNETH J. MCNAUGHT, NORTH EPPING, AUSTRALIA; ERIC
MALONEY, TAMWORTH, AUSTRALIA; IAN L. BROWN, TAMWORTH,
AUSTRALIA; ADRIAN T. KNIGHT, LANE COVE, AUSTRALIA.

CONTINUING DATA AS CLAIMED BY APPLICANT-

THIS APPLN IS A 371 OF PCT/AU93/00389 07/30/93

FOREIGN/PCT APPLICATIONS-AUSTRALIA
AUSTRALIA

PL 3894 07/31/92
PL 7266 02/12/93

TITLE

HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

PRELIMINARY CLASS: 800

DECLARATION, POWER OF ATTORNEY AND PETITION

6.5010

As a below named inventor, I hereby declare that:

My residence, post office and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter claimed and for which a patent is sought on the invention entitled, the specification of which HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

[] is attached hereto [X] was filed on as Application Serial No. and was amended on (if applicable)

PCT/AU93/00389 filed 30 July 1993
I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
Number	Country	Day/Month/Year filed	Yes	No
PL 3894	Australia	31 July 1992	X	
PL 7266	Australia	12 February 1993	X	

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial No.	Filing Date	Status: Patented, Pending, Abandoned
------------------------	-------------	--------------------------------------

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorney(s) and/or agent(s): Allan M. Lowe, Reg. No. 19,641; Robert L. Price, Reg. No. 22,685; Robert E. LeBlanc, Reg. No. 17,219; Stephen A. Becker, Reg. No. 26,527; Henry Shur, Reg. No. 17,414; Israel Gopstein, Reg. No. 27,333; Benjamin J. Hauptman, Reg. No. 29,310; Donald C. Casey, Reg. No. 24,022; Kenneth E. Krosin, Reg. No. 25,735; Chittaranjan N. Nirmel, Reg. No. 30,408; Holly D. Kozlowski, Reg. No. 30,468; Gene Z. Robinson, Reg. No. 33,351; Frank P. Presta; Reg. No. 19,828; Michael S. Gzybowski, Reg. No. 32,816; Robert G. Lee, Reg. No. 30,280; Keith E. George, Reg. No. 24,111; Arthur P. Demers, Reg. No. 32,660; Edward J. Wise, Reg. No. 34,523; Christopher W. Brody, Reg. No. 33,613; Demetra J. Mills, Reg. No. 34,506; Daniel Y.J. Kim, Reg. No. 36,186; Alexander Yampolsky, Reg. No. 36,324; Sharon E. Finkel, Reg. No. 35,798; Robert P. Bell, Reg. No. 34,546; and Alfred A. Stadnicki, Reg. No. 30,226. all of

LOWE, PRICE, LEBLANC & BECKER
99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314

with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and all future correspondence should be addressed to them.

Full name of sole or first inventor: Kenneth J. McNAUGHT

Inventor's Signature: _____

Date: _____

Residence: _____

Citizenship: _____

Post Office Address: _____

63010

page 2 of 2

PCT/AU93/00389 filed 30 July 1993

HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Full Name of Second Inventor: Eric MALONEY ^{MOLONEY} *Edm. 11/4/95*

Inventor's Signature: *E.R. Moloney* Date: 22/12/94

Residence: 169 Brisbane Street, Tamworth, NSW 2340, Australia

Citizenship: Australian

Post Office Address: As above

Full Name of Third Inventor: Ian L BROWN

Inventor's Signature: _____ Date: _____

Residence: _____

Citizenship: _____

Post Office Address: _____

Full Name of Fourth Inventor: Adrian Timothy KNIGHT

Inventor's Signature: _____ Date: _____

Residence: _____

Citizenship: _____

Post Office Address: _____

Docket No.: 1451-08/PTO



#17
- Applications
PATENT
9-15-95
RECEIVED
SEP 15 1995

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Kenneth J. McNAUGHT et al

Serial No. 08/374,645

Filed: April 27, 1995

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Group Art Unit: 1804

Examiner: *W. A. Hermy*

INFORMATION DISCLOSURE STATEMENT

Honorable Commissioner of
Patents and Trademarks
Washington, D. C. 20231

Sir:

In accordance with the provisions of 37 C.F.R. 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached form PTO-1449. It is respectfully requested that the references be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

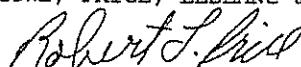
This Information Disclosure Statement is being filed within three months of the U.S. filing date OR before the mailing date of a first Office Action on the merits. No certification or fee is required.

Serial No. 08/374,645

The relevance of each non-English language reference is discussed in the present specification.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER



Robert L. Price
Registration No. 22,685

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 RLP:ajb
Date: August 30, 1995

SHEET 1 OF 1

[illegible]

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

Docket No.: 1451-007PCT

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Application of

Kenneth J. McNAUGHT et al

Serial No. 08/374,645

Filed: April 27, 1995

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Group Art Unit: 1803

Examiner: VEITENHEIM, E.

INFORMATION DISCLOSURE STATEMENT

Honorable Commissioner of
Patents and Trademarks
Washington, D. C. 20231

Sir:

In accordance with the provisions of 37 C.F.R. 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached form PTO-1449. It is respectfully requested that the references be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is being filed within three months of the U.S. filing date OR before the mailing date of a first Office Action on the merits. No certification or fee is required.

Serial No. 08/374,645

Each English language reference was cited in a corresponding foreign application search report or office action and its relevance discussed therein. A copy of the foreign search report or office action is attached for the Examiner's information.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER



Robert L. Price
Registration No. 22,685

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 RLP:ajb
Date: March 13, 1996

SHEET 1 OF 1

[illegible]

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.


UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS
 Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/374,645	04/27/95	MCNAUGHT	K 1451-007PC

18M2/0809
 LOWE PRICE LEBLANC & BECKER
 99 CANAL CENTER PLAZA SUITE 300
 ALEXANDRIA VA 22314

HAAS EXAMINER	
ART UNIT	PAPER NUMBER
1803	

DATE MAILED:

06/09/96

Please find below a communication from the EXAMINER in charge of this application.

Commissioner of Patents

Office Action Summary	Application No. 08/374,645	Applicant(s) McNaught et al.
	Examiner Thomas Haas	Group Art Unit 1803

☐ Responsive to communication(s) filed on _____.

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 0 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-23 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☐ Claim(s) _____ is/are rejected.

☐ Claim(s) _____ is/are objected to.

☒ Claims 1-23 are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Serial Number: 08/374,645
Art Unit: 1803

-2-

Part III DETAILED ACTION

Election/Restriction

Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-6, drawn to hybrid maize seed, classified in Class 800, subclass 250, for example.

II. Claims 8-23, drawn to maize starch having an amylose content of greater than 80%, classified in Class 536, subclass 102, for example.

The inventions are distinct, each from the other because of the following reasons:

The inventions are patentably distinct because they are not linked by a single special technical feature. The claims are not drawn to a single maize plant with a single genotype, or starch produced from a single maize plant. Furthermore, the inventions are both biochemically and physiologically divergent (seeds with modified genotype vs. starch with a modified amylose content).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their divergent classification and recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h).

Serial Number: 08/374,645
Art Unit: 1803

-3-

Applicant is advised that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed.

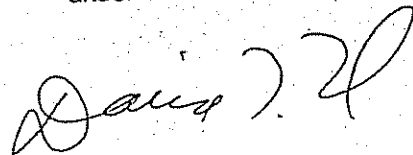
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas Haas whose telephone number is (703) 305-7270. The examiner can normally be reached on Mon.-Fri. from 7:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Robinson, can be reached on (703) 308-2897. The fax phone number for this Group is (703) 308-4227.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

tmh
August 6, 1996

DAVID T. FOX
PRIMARY EXAMINER
GROUP 180



Docket No.: 1451-007PCT



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Kenneth J. McNAUGHT et al

Serial No. 08/374,645

Filed: April 27, 1995

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Group Art Unit: 1804

Examiner: T. Haas

RECEIVED

RESPONSE TO OFFICIAL ACTION

SEP 11 1996

GROUP 1800

Honorable Commissioner of
Patents and Trademarks
Washington, D. C. 20231

Sir:

This is in response to the Official Action dated August 9, 1996 in this application. In the Action, the Examiner requires restriction between the following inventions:

Group I - claims 1-6, drawn to a hybrid maize seed; and

Group II - claims 8-23, drawn to maize starch having an amylose content of greater than 80%.

In response to this requirement, Applicants elect Group II, claims 8-23, drawn to the maize starch.

The requirement for restriction is respectfully traversed and reconsideration is requested.

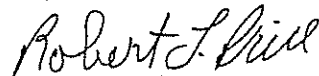
The Examiner holds that the inventions are patentably distinct because they are not linked by a single special technical feature. Applicant disagrees with this contention. Claim 1, a main claim of

Serial No. 08/374,645

Group I is directed to a hybrid maize seed capable of producing a starch having an amylose content of more than 80%. Claim 8, the main claim of Group II, is a starch which can be produced from the maize seed of claim 1. Therefore, Applicants submit that the inventions are linked by a special technical feature. Therefore, reconsideration of the requirement for restriction is respectfully traversed. It is believed that the above represents a complete response to the Official Action and reconsideration is requested.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER



Robert L. Price
Registration No. 22,685

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 RLP:ajb
Date: September 9, 1996


UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS
 Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/374,645	04/27/95	MCNAUGHT	K 1451-007PCT

 12M1/1216
 LOWE PRICE LEBLANC & BECKER
 99 CANAL CENTER PLAZA SUITE 300
 ALEXANDRIA VA 22314

EXAMINER	
NUTTER, N	
ART UNIT	PAPER NUMBER
1207	11

DATE MAILED: 12/16/96

 This is a communication from the examiner in charge of your application.
 COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 9 Sept 1996 ☐ This action is made final.

 A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
 Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input checked="" type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-23 are pending in the application.
 Of the above, claims 1-7 are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 8-23 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☒ This application has been filed with Informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other _____

EXAMINER'S ACTION

PTOL-325 (Rev. 2/93)

Exhibit C 0083

Serial Number: 08/374,645

-2-

Art Unit: 1207

This application does not contain an Abstract of the Disclosure as required by 37 C.F.R. § 1.72(b). An Abstract on a separate sheet is required.

Applicant's election-with traverse of Group II, claims 8-23 in Paper No. 10 is acknowledged. The traversal is on the ground(s) that "the inventions are linked by a special technical feature", that is, "Group I is directed to a hybrid maize seed capable of producing a starch having an amylose content of more than 80%, and Group II is drawn to "a starch which can be produced from the maize seen of claim 1". This is not found persuasive because the claims of Group I are drawn to hybrid maize seed. The claims of Group II are directed to maize starch having an altered amylose content. The inventions of Groups I and II are not linked by a single special technical feature. The claims of Group II read broadly on maize starch with an altered amylose content produced by any method. They are not directed to the hybrid plants of Group I. Furthermore, many of the plant claims are not limited to a single genotype.

Serial Number: 08/374,645

-3-

Art Unit: 1207

The requirement is still deemed proper and is therefore made FINAL.

The Restriction requirement of 9 August 1996, paper No. 9, erroneously omitted claim 7, drawn to a hybrid maize seen and properly is included in the Group I-claims.—As such, the claim is being withdrawn from consideration as being drawn to a nonelected invention.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 8-23 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Ferguson et al.

Serial Number: 08/374,645

-4-

Art Unit: 1207

Note the Abstract and the many Examples which teach a range of amylopectin of less than 5%, with amylose of at least 75% of the total composition.

Claims 8-23 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The descriptive language recited in claims 8 and 12 neither constitutes acceptable Markush language, nor are the claims clear as to what may be embraced thereby.

Recitation of "including" in claim 12, and "preferably" in claims 18 and 19 render those claims as vague and confusing since they constitute further limitations on the claims. That is, they recited range within ranges. As such, the proper metes and bounds of the claims cannot be clearly ascertained.

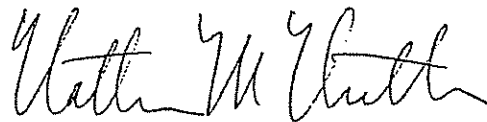
Serial Number: 08/374,645

-5-

Art Unit: 1207

A facsimile center has been established in Group 1200, room 3C10.
The hours of operation are Monday through Friday, 8:45 AM to 4:45 PM.
The telecopier numbers for accessing the facsimile machine is (703) 308-4556 or (703) 305-4556.

Any inquiry concerning this communication should be directed to
Examiner Nathan M. Nutter at telephone number (703) 308-2443.



NATHAN M. NUTTER
PRIMARY EXAMINER
GROUP 1200

NUTTER; aco
December 12, 1996

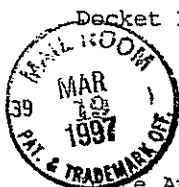
TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTD-892 (REV. 2-92)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 08/374,645		GROUP/ART UNIT 1207		ATTACHMENT TO PAPER NUMBER -11				
NOTICE OF REFERENCES CITED				APPLICANT(S) McNaught et al								
U.S. PATENT DOCUMENTS												
		DOCUMENT NO.				DATE	NAME	CLASS	SUB-CLASS	FIGURING DATE IF APPROPRIATE		
A		5300	145		4-94	Ferguson et al	106	213	28 Aug 1992			
B												
C												
D												
E												
F												
G												
H												
I												
J												
K												
FOREIGN PATENT DOCUMENTS												
		DOCUMENT NO.				DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PP. SPEC.
L												
M												
N												
O												
P												
Q												
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)												
R												
S												
T												
U												
EXAMINER		DATE										
Walter W. W. W.		11-96										
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)												

3-28-97

12c

12/13



Docket No.: 1451-007PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Application of

Kenneth J. McNAUGHT et al

Serial No. 08/374,645

Filed: April 27, 1995

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Group Art Unit: 1804

Examiner: N. Nutter

SUPPLEMENTAL AMENDMENT

Honorable Commissioner of
Patents and Trademarks
Washington, D. C. 20231

Sir:

In further response to the Official Action of December 16, 1997, please amend the application as follows:

IN THE ABSTRACT:

Please insert the enclosed new page 21 to provide an Abstract of Disclosure for the application.

REMARKS

In the Official Action of December 16, 1996, the Examiner required that an Abstract be presented for the application. In responding to the Action on March 17, 1997, the due date, the requirement for the Abstract was overlooked. On review, it was determined that an Abstract should be presented for the

230 EK 12-2237 04/14/97 08374545
23016 115 110.00CH

Serial No. 08/374,645

application. Accordingly, presented herewith on separate page 21, is an Abstract for this application.

Entry of the Abstract is requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 12-2237 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER


Robert L. Price
Registration No. 22,685

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 RLP:ajb
Date: March 19, 1997
Facsimile: 703-684-1124



Docket No.: 1451-007

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Kenneth J. McNAUGHT et al
Serial No. 08/374,645
Filed: April 27, 1995
For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Group Art Unit: 1804
Examiner: N. Nutter

AMENDMENT

Honorable Commissioner of
Patents and Trademarks
Washington, D. C. 20231

Sir:

In response to the Official Action of December 16, 1997,
please amend the application as follows:

IN THE CLAIMS:

Please cancel claim 8 and replace with the following new claim.

24.

24. A maize starch selected from the group consisting of
maize starch having an amylose content of more than 80%, physically
or chemically modified derivatives of maize starch having an
amylose content of more than 80%, destructurized maize starch
having an amylose content of more than 80%, and non-destructurized
maize starch having an amylose content of more than 80%---

Serial No. 08/374,645

Claim 9, line 1, change "8" to --24--.

Please cancel claim 12 and replace with the following new claim 25.

~~25~~ ^{C1} A composition comprising a maize starch selected from the group consisting of maize starch having an amylose content of more than 80%, physically or chemically modified derivatives of maize starch having an amylose content of more than 80%, deconstructurized maize starch having an amylose content of more than 80%, and non-deconstructurized maize starch having an amylose content of more than 80%.--

Claim 13, line 1, change "12" to --25--.

Please cancel claims 18 and 19 and replace with the following new claims ~~26~~, ~~27~~, ~~28~~ and ~~29~~.

~~26~~ ² A starch fraction as in claim ~~17~~ ²⁰, wherein the amylose content of the high amylose starch is 70% or more.

^{C3} ~~27~~ ⁸² A starch fraction as in claim ~~26~~ ⁷, wherein the amylose content of the high amylose starch is 80% or more.

~~28~~ ⁹¹³ A starch fraction as in claim ~~27~~ ¹²⁸, wherein the amylose content of the high amylose starch is 85% or more.

Serial No. 08/374,645

C³ 10/14/96
cont. 25. A starch fraction as in claim 28, wherein the amylose
content of the high amylose starch is 90% or more.--

REMARKS

The Official Action of December 16, 1996 has been carefully considered; accordingly, the amendments presented herewith for the application, taken with the following remarks and evidence, should place this application in condition for allowance.

It is noted that the Examiner has made the restriction requirement final and also included claim 7 in the non-elected claims. Accordingly, this Action is on the merits of claims 8-23. It is requested that non-elected claims 1-7 remain in the application until a divisional application is filed directed thereto. However, if the Examiner finds that the elected claims in this application are allowable as a result of this response, he is authorized to cancel the non-elected claims 1-7 from the application.

In the Action, claims 8-23 were rejected under 35 USC § 112, second paragraph, as being indefinite for language used in claims 8-12, 18 and 19. In response to this requirement, claim 8 is rewritten as new claim 24 and claim 12 is rewritten as new claim 25. It is believed that the new claims do not contain the objectionable language noted by the Examiner. Further, claims 18 and 19 have been cancelled and replaced by new independent claims

Serial No. 08/374,645

26, 27, 28 and 29 in order to overcome the problem of claiming ranges within ranges and to remove the other language objected to by the Examiner. Therefore, since these new claims are believed to now comply with 35 USC § 112, reconsideration of this rejection is requested.

Elected claims 8-23 also stand rejected under 35 USC § 102(e) as anticipated by U.S. Patent 5,300,145 to Ferguson et al. As applied to the new claims and in view of the following remarks and evidence, this rejection is traversed and reconsideration is requested.

It is noted that the Ferguson patent relates to low amylopectin starch. It is also noted that this patent was published April 5, 1994 on an application filed August 28, 1992.

The present application originated as a priority application in Australia and was filed as an International application under the Patent Cooperation Treaty on July 30, 1993. The Filing Receipt of this application indicates while this application entered the National Phase on April 27, 1995, a priority is claimed under 35 USC § 371 to PCT/AU93/00389, filed July 30, 1993, and priority is claimed to Australian application PL3894, filed July 31, 1992, and Australian application PL7266, filed February 12, 1993.

Applicants submit that their priority date in Australia antedates the U.S. filing date of August 28, 1992 of the Ferguson et al. patent. In support of Applicants' argument, there is

Serial No. 08/374,645

presented herewith a certified copy of Applicants' Priority Application No. PL3894, filed July 31, 1992 and entitled "HIGH AMYLOSE STARCH". In addition, submitted herewith is a certified copy of Australian Application No. PL7266, filed February 12, 1993. Priority to these certified priority applications is claims under 35 USC § 119.

It is submitted that the priority applications and particularly, Priority Application No. PL3894, having a filing date of July 31, 1992, are sufficient to antedate the filing date of August 28, 1992, of the Ferguson et al. patent. It is further submitted that all claims in the application are supported by the priority application and are clearly allowable in view of Applicants' effective priority date for this subject matter.

For these reasons, it is submitted that the rejection under 35 USC § 102(e) should be withdrawn.

It is believed that the above represents a complete response to the Official Action and allowance is now in order.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER



Robert L. Price
Registration No. 22,685

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 RLP:ajb
Date: March 17, 1997
Facsimile: 703-684-1124

Docket No.: 1451-007

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Kenneth J. McNAUGHT et al

Serial No. 08/374,645

Group Art Unit: 1804

Filed: April 27, 1995

Examiner: N. Nutter

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

THE COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D. C. 20231

RECEIVED

APR 04 1997

Dear Sir:

GROUP 1200

Transmitted herewith is an Amendment in the above identified application.

☐ No additional fee is required.☒ Also attached: Certified Copy of Applicants' Priority Application No. PL3894, and a Certified Copy of Australian Application No. PL7266.

The fee has been calculated as shown below:

	NO. OF CLAIMS	HIGHEST PREVIOUSLY PAID FOR	EXTRA CLAIMS	RATE	FEE
Total Claims	25	23	2	x \$22 =	44.00
Independent Claims	4	4	0	x \$80 =	0
If multiple claims newly presented, add \$260.00					
Fee for extension of time					
TOTAL FEE DUE					44.00

☒ Please charge my Deposit Account No. 12-2237 in the amount of \$44.00. An additional copy of this transmittal sheet is submitted herewith.☒ The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment, to Deposit Account No. 12-2237, including any filing fees under 37 CFR 1.16 for presentation of extra claims and any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER

Robert L. Price
Registration No. 22,68599 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 RLP:ajb
Date: March 17, 1997
Facsimile: 703-684-1124

Interview Summary	Application No. 08/374,645	Applicant(s) McNaught et al
	Examiner Nathan M. Nutter	Group Art Unit 1207

All participants (applicant, applicant's representative, PTO personnel):

(1) Nathan M. Nutter (3) _____

(2) Robert L. Price (4) _____

Date of Interview Jun 19, 1997

Type: ☒ Telephonic ☐ Personal (copy is given to ☐ applicant ☐ applicant's representative).

Exhibit shown or demonstration conducted: ☐ Yes ☒ No. If yes, brief description:

Agreement ☒ was reached. ☐ was not reached.

Claim(s) discussed: all pending claims, specifically claims 1-7

Identification of prior art discussed:
None.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:
Applicants' counsel was contacted to cancel claims 1-7 drawn to an invention non-elected with traverse in Paper No. 10 of 9 September 1996. This will be done by an Examiner's Amendment to the Specification, to follow.

[A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.]

1. ☒ It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a response to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. ☒ Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.

Nathan M. Nutter

Examiner Note: You must sign and stamp this form unless it is an attachment to a signed Office action.

NATHAN M. NUTTER
PRIMARY EXAMINER

Serial Number: 08/374,645

Page 2

Art Unit: 1207

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

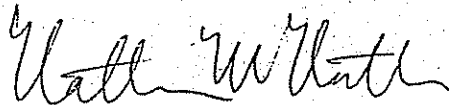
Authorization for this examiner's amendment was given in a telephone interview with Robert L. Price on 19 June 1997.

2. The application has been amended as follows:

In the claims:

Cancel claims 1-7.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan M. Nutter whose telephone number is (703) -308-2443.



nmn

June 19, 1997

NATHAN M. NUTTER
PRIMARY EXAMINER
GROUP 1200


**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/374,645	04/27/95	MCNAUGHT	K 1451-007PCT

EXAMINER	
NUTTER, N	
ART UNIT	PAPER NUMBER
1207	1514 B

 DATE MAILED: 06/24/97

 12M1/0624
 LOWE PRICE LEBLANC & BECKER
 99 CANAL CENTER PLAZA SUITE 300
 ALEXANDRIA VA 22314

 This is a communication from the examiner in charge of your application.
 COMMISSIONER OF PATENTS AND TRADEMARKS

NOTICE OF ALLOWABILITY

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

- ☒ This communication is responsive to 4 April 1997
- ☒ The allowed claim(s) is/are 9-11, 13-17 and 20-29
- ☐ The drawings filed on _____ are acceptable.
- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

- ☒ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
- ☒ Applicant MUST submit NEW FORMAL DRAWINGS
- ☐ because the originally filed drawings were declared by applicant to be informal.
- ☒ including changes required by the Notice of Draftperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. 11.
- ☐ including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.
- ☐ including changes required by the attached Examiner's Amendment/Comment.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftperson.
- ☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

- ☐ Notice of References Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Notice of Draftperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152
- ☒ Interview Summary, PTO-413
- ☒ Examiner's Amendment/Comment
- ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
- ☐ Examiner's Statement of Reasons for Allowance



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**NOTICE OF ALLOWANCE
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☐ Note attached communication from the Examiner

☐ This notice is issued in view of applicant's communication filed _____

SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
01/24/2004	01/24/2004	01	MUTTER, JR	01/24/2004
First Named Applicant: [REDACTED]				

TITLE OF INVENTION

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

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SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/374,645	04/27/95	018	NUTTER, N-	1207 06/24/97
First Named Applicant: MCNAUGHT, KENNETH J.				

TITLE OF INVENTION: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
1 1451-007PCT	536-103.000	063	UTILITY	NO	\$1290.00	09/24/97

10/08/1997 RJW:SDH 000000000 DAW:122237 08374645
01 FC:142 1290.00 CB

3. Correspondence address change (Complete only if there is a change)	4. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR, alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.
Lowe, Price, LeBlanc & Becker 99 Canal Center Plaza, Suite 300 Alexandria, VA 22314	1 Lowe, Price, LeBlanc 2 & Becker 3

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5. ASSIGNMENT DATA TO BE PRINTED ON THE PATENT (print or type)

(1) NAME OF ASSIGNEE: GOODMAN FIELDER LIMITED
(2) ADDRESS: (CITY & STATE OR COUNTRY) Sydney, AUSTRALIA

- A. ☐ This application is NOT assigned.
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(Authorized Signature) Robert L. Price, Reg. #22,685 (Date) 9/5/97

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PTOL-85B (REV. 4-94) (0651-0033)

Attorney Docket: 1451-007PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Kenneth J. McNAUGHT et al.

Int'l Appln. No.
PCT/AU93/00389

Int'l Filing Date
July 30, 1993

For: HIGH AMYLOSE STARCH AND
RESISTANT STARCH FRACTIONS

BOX PCT

INFORMATION DISCLOSURE STATEMENT

Honorable Commissioner of
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Washington, D.C. 20231

Sir:

In accordance with the provisions of 37 C.F.R. 1.56 and 37 C.F.R. 1.97-1.98, it is requested that the reference(s) listed on the attached Form PTO-1449 be made of record.

The following prior art were cited in a corresponding Application and cited and characterized in the Australian search Report dated October 7, 1993. No further elaboration is believed necessary.

"STARCH AND ENZYME-RESISTANT STARCH FROM HIGH-AMYLOSE BARLEY",
pp. 589-596, 1991, J. Szczodrak et al.

Australian Patent No. 45616/89, as cited in the specification on
page 4.

SAH
#16
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SHEET 1 OF 1

[illegible]

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

X-741 C16

Starch and Enzyme-Resistant Starch from High-Amylose Barley

J. SZCZODRAK^{1,2} and Y. POMERANZ^{1,3}

ABSTRACT

Cereal Chem. 68(6):589-596

A Glacier variety selection with a 43% amylose content was used for isolation and purification of barley starch. The starch was separated into two fractions that varied in granule size, and the two fractions were assayed using chemical, microscopic (scanning electron microscopy), and thermo-analytical methods. Large and small barley starch granules were different in both chemical composition and endothermic properties; the small starch granules were higher in amylose than the large granules. Heat-moisture treatment (autoclaving at 121°C) with subsequent cooling was used to produce amylose-resistant starch (RS) from purified high-amylose starch samples. The formation of RS in barley starch was strongly affected

by the number of autoclaving-cooling cycles; increasing the number of cycles from one to 20 raised the RS yield from 6 to 26%. Differential scanning calorimetry thermograms showed that all isolated RS preparations exhibited an endothermic transition over a similar temperature range (116–177°C), with a mean peak temperature at 158°C, which could apparently be attributed to the melting of RS amylose crystallites. The maximum melting enthalpy for RS from barley, 37 J/g, was achieved by 12 repeated autoclaving-cooling cycles. The thermodynamic data indicated that changes in the quality of RS occurred during autoclaving-cooling cycles.

Barley is the fourth most important cereal (after wheat, rice, and maize), consisting of about 12% of the world's total cereal production (Mac Key 1981). It is mainly used as a feed grain but also finds substantial application in the brewing and distilling industries, especially in the manufacture of malt, and in the food industry. Owing to its nutritional and chemical properties, in particular a high dietary fiber (DF) content and a high proportion of soluble viscous DF components, barley is considered the most suitable grain in the human diet (Munck 1981, Björck et al 1990). Recent clinical studies have also demonstrated the hypoglycemic and hypocholesterolemic function of barley β -glucans in human feeding trials (Anderson 1980, Newman et al 1989).

Starch, the major reserve storage polysaccharide of barley, occurs in large lenticular and small spherical granules. The starch type can vary in certain genotypes from regular (75% amylopectin, 25% amylose), to high-amylose (about 50% amylose), to waxy (up to 100% amylopectin) (Pomeranz 1985, 1987; Hosney 1986). During the isolation of barley starch, the small granules have a tendency to associate with the protein fraction (brown layer), which appears on top of centrifuged suspensions of crude starch. The lower, white layer obtained after centrifugation contains mostly the large starch granules. McDonald and Stark (1988) pointed out that discarding of the brown layer (widely applied in procedures for isolation of barley starch) results in severe loss of small granules and affects the ratio of small to large granules. The authors suggested that the brown layer should be purified separately and then added back to the white layer to give representative starch granule preparations.

Recently, much interest has been focused on a particular type of starch that is indigestible in vitro and in vivo, i.e., resistant starch (RS) (Englyst and Cummings 1987, Sievert and Pomeranz 1989, Siljeström et al 1989). This type of amylose-resistant starch is formed in food products processed by methods that use relatively high moisture contents, such as cooking, baking, and autoclaving (Englyst et al 1983, Siljeström and Asp 1985). The reduced bioavailability of RS in the human gastrointestinal tract has particular significance to diabetics because it lowers their insulin demand (Jenkins et al 1983). Moreover, malabsorbed starch reaching the colon can exert physiological effects similar to those of DF (Björck et al 1987, Jenkins et al 1987, Schneeman 1989). Examination of RS by enzymatic methods (Berry 1986), iodine-binding capacity (Ring et al 1988), column permeation chromatography (Berry et al 1988, Siljeström et al 1989), differential scanning calorimetry (Sievert and Pomeranz 1989, 1990), and X-ray diffraction (Sievert

et al 1991) indicates that retrograded amylose is mainly responsible for the generation of RS and that RS represents noncovalently bonded crystallites within the amylose component of starch. The observation that the RS yield of autoclaved starch suspensions increased with increasing amylose content (Sievert and Pomeranz 1989) also supports this hypothesis. The presence of interchain amylose associations in the RS fraction was demonstrated by an endothermic transition at about 155°C in differential scanning calorimetry thermograms (Sievert and Pomeranz 1989, 1990). In addition to amylose crystallites, crude RS preparations contain native starch lipids and protein originating from added enzymes used in the isolation procedure (Russell et al 1989). It also appears that lipids in the RS fraction may be in a noncomplexed form and may adhere to the undigested starch matrix (Sievert and Pomeranz 1990).

The hypothesis that the amylose-amylopectin ratio is an important determinant of RS formation focused interest on high-amylose varieties of cereals as potential sources for RS production. Most of the earlier studies (with the exception of the one by Björck et al 1990) concentrated on the formation of RS from wheat and amylomaize starches. The objectives of this study were to reevaluate various factors that contribute to formation of RS; to isolate and characterize small and large starch granules from high-amylose barley and produce RS from the isolated starches; and to characterize the RS by enzymatic, microscopic (scanning electron microscopy [SEM]), and thermodynamic methods.

MATERIALS AND METHODS

Chemicals

Amyloglucosidase, A-3042, from *Aspergillus niger*; protease, P-5147, type XIV, from *Sreptomyces griseus*; protease P-5380, Type VIII, from *Bacillus licheniformis*; peroxidase, P-6782, type VI-A, from horseradish; glucose oxidase, G-6766, from *A. niger*; and o-dianisidine, D-3252, were purchased from Sigma Chemical Co., St. Louis, MO. Heat-stable α -amylase, Takalite L-340, from *B. licheniformis*, was obtained from Miles Laboratories, Inc., Elkhart, IN.

Barley

A covered barley selection of cv. Glacier, high in amylose, from the 1988/89 crop was obtained from S. E. Ullrich, Agronomy Department, Washington State University. Crude flour from the barley contained 54.5% starch (dry matter [dm] basis), of which 43.1% was amylose; 15.7% crude protein (N \times 6.25); 3.0% ash; and 3.4% lipids.

Isolation of Starch

Starch was isolated from the grains by a modification of the method of McDonald and Stark (1988). Barley kernels were cracked lightly by passing them through a sample mill (Tecator,

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Cemotec 1090) and dehulled in an air-aspirated grain cleaner (Kice-DT4, Kice Metal Products Co., Inc., Wichita, KS). After steeping in 0.02M HCl and neutralizing with 0.2M NaOH, the pearled material was rubbed gently in a mortar with water and the resulting slurry was successively sieved through 130- and 73- μ m polypropylene screens. The residue was homogenized in a Waring Blendor with water; the mixture was screened; and the process was repeated three to four times. The lower, white layer obtained on centrifugation ($1,700 \times g$ for 20 min) of barley starch suspensions was purified six times by the toluene shaking procedure (McDonald and Stark 1988). The pigmented fractions (proteinaceous brown layer, tailings) on top of the starch were pooled and purified three times by protease XIV (5 mg/g of starch in 30 ml of incubation mixture) and six times by the toluene shaking procedure. The separated starch layers, crude flour, crude

brown layer, and residue after starch isolation were used for further characterization.

Enzyme-Resistant Starch

The formation, isolation, and determination of RS were performed according to the methods developed by Sievert and Pomcran (1989). The following modifications were introduced: the starch-water ratio used for RS formation was 1:5. The suspensions were autoclaved for 1 hr at 121°C and cooled overnight in a refrigerator (4°C). The treated samples were vacuum-dried. RS was estimated by an enzymatic-gravimetric assay using a heat-stable bacterial α -amylase and fungal amyloglucosidase. In another series of experiments, a procedure was added between the digestion of sample with amylase and amyloglucosidase. Protease VIII (0.2 ml, 10 mg per sample) was added, and the sample was

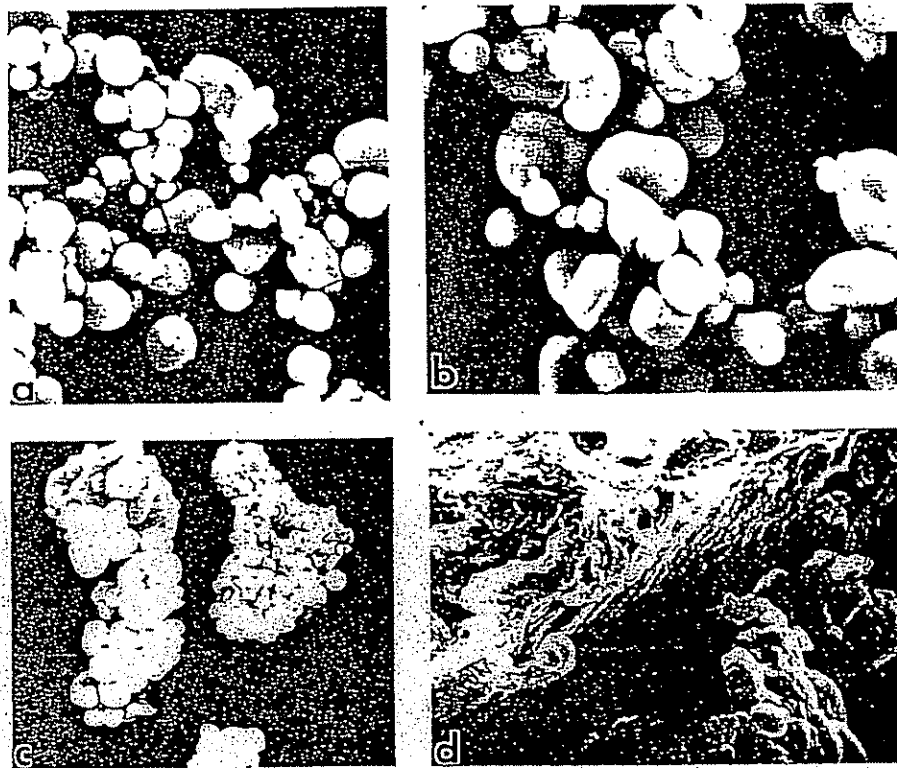


Fig. 1. Scanning electron micrographs of the purified brown barley starch layer (a), the purified white barley starch layer (b), the crude brown barley layer (c), and the residue after starch isolation (d).

TABLE I
Yield and Chemical Composition (% dry matter) of Starchy Materials Isolated from Covered Glacier High-Amylose Barley

Material	Yield	Crude Protein	Starch	Amylose (% of starch)	Ash	Free Lipids
Crude flour	100.0	15.7	54.5	43.1	3.0	3.4
Purified white layer ^a	18.0	0.9	97.8	44.5	0.2	0.5
Crude brown layer	20.7	16.8	78.0	46.4	0.5	2.0
Purified brown layer ^b	9.4	0.8	97.0	47.9	0.3	0.6
Residue after starch isolation	49.8	17.8	32.1	41.0	1.7	4.9

^a Purified six times using toluene extraction.

^b Purified three times using protease and six times using toluene extraction.

incubated at 60°C for 30 min (pH 7.5). After hydrolysis, the enzymatic extracts were centrifuged (2,200 × g for 10 min) and the supernatant was discarded. The insoluble residue (crude RS) was then washed four times using hot water (60°C) and autoclaved for 20 min at 121°C to inactivate the residual enzymes. Thereafter,

a series of five washings using hot water (90°C) were performed to remove digested nonresistant starch and other by-products of the enzyme digestion process. The resulting purified RS was vacuum-dried, weighed, finely ground, and used for further characterization.

TABLE II
Differential Scanning Calorimetry of Starchy Materials Isolated from Covered Glacier High-Amylose Barley*

Material	Starch Gelatinization Transition				Amylose-Lipid Complex Transition			
	T_i	T_p	T_c	ΔH	T_i	T_p	T_c	ΔH
Crude flour	62.1	72.8	82.9	2.3	86.8	97.1	107.3	1.6
Purified white layer	54.5	66.6	82.3	11.0	90.2	103.8	112.4	3.1
Crude brown layer	56.5	70.3	82.1	5.4	90.4	102.5	112.4	2.7
Purified brown layer	56.2	66.6	81.7	10.2	87.2	103.2	111.4	4.2
Residue after starch isolation	63.6	75.9	86.8	0.9	90.2	99.6	110.8	0.7

*Values are examples of three determinations.

^b T_i , T_p , and T_c = initial, peak, and completion transition temperatures, respectively.

^cSD < 1.0°C, n = 3.

^dSD < 10% of the mean, n = 3.

TABLE III
Effects of Autoclaving-Cooling Cycles on Enzymatic (Resistant Starch Yields) and Thermal Characteristics of a Purified White Starch Layer Isolated from Covered Glacier High-Amylose Barley*

Number of Autoclaving-Cooling Cycles	Resistant Starch Yield (%)	Transition Temperatures (T , °C) and Transition Enthalpies (ΔH , J/g dry matter)							
		First Transition				Second Transition (Resistant Starch)			
		T_i	T_p	T_c	ΔH	T_i	T_p	T_c	ΔH
0 ^a	0.0	54.5	66.6	82.3	11.0	nd ^f	nd	nd	nd
0 ^b	4.1	34.8	56.0	64.8	6.8	128.9	146.6	167.4	17.9
0 ^c	2.4	39.1	54.5	63.3	4.3	130.3	143.7	169.7	13.3
0 ^d	0.9	30.0	44.5	62.8	3.0	106.8	138.2	167.0	9.6
1	7.8	43.2	58.3	65.7	2.4	122.3	153.6	174.0	22.8
2	10.0	45.3	55.6	62.7	1.1	123.0	158.4	173.1	26.2
4	14.2	48.2	56.5	65.2	0.7	127.4	160.8	174.6	32.6
12	23.2	43.3	54.3	61.3	0.6	126.6	159.1	176.8	37.4
20	25.9	43.5	52.6	59.3	0.6	120.4	158.9	175.4	37.8

*Thermal characteristics determined by differential scanning calorimetry. Enthalpy values refer to vacuum-dried resistant starch. T_i , T_p , and T_c = initial, peak, and completion transition temperatures, respectively.

^bNative pure starch.

^cPure starch dried under vacuum and treated with amylases.

^dPure starch treated with amylases (without preliminary vacuum drying).

^ePure starch treated with amylases and protease (without preliminary vacuum drying).

^fNone detected. See also Table II.

TABLE IV
Effects of Autoclaving-Cooling Cycles on Enzymatic (Resistant Starch Yields) and Thermal Characteristics of a Purified Brown Starch Layer Isolated from Covered Glacier High-Amylose Barley*

Number of Autoclaving-Cooling Cycles	Resistant Starch Yield (%)	Transition Temperatures (T , °C) and Transition Enthalpies (ΔH , J/g dry matter)							
		First Transition				Second Transition (Resistant Starch)			
		T_i	T_p	T_c	ΔH	T_i	T_p	T_c	ΔH
0 ^a	0.0	56.2	66.6	81.7	10.2	nd ^f	nd	nd	nd
0 ^b	3.8	45.1	55.6	65.7	3.9	133.7	150.4	169.1	17.1
0 ^c	2.2	39.1	51.7	62.8	4.1	129.4	153.4	164.4	8.9
0 ^d	0.9	43.7	52.0	59.3	1.1	106.8	138.9	169.6	7.5
1	5.8	37.0	56.0	64.2	4.3	116.4	155.4	172.4	19.4
2	8.5	39.8	54.2	62.9	2.0	116.5	157.8	171.9	23.1
4	12.9	42.4	53.7	63.5	1.6	117.4	159.2	176.1	28.6
12	21.5	42.4	51.7	59.2	0.7	118.2	159.9	175.2	37.3
20	25.5	44.8	49.9	56.3	0.2	121.9	159.8	174.1	36.9

*Thermal characteristics determined by differential scanning calorimetry. Enthalpy values refer to vacuum-dried resistant starch.

^b T_i , T_p , and T_c = initial, peak, and completion transition temperatures, respectively.

^cNative pure starch.

^dPure starch dried under vacuum and treated with amylases.

^ePure starch treated with amylases (without preliminary vacuum drying).

^fPure starch treated with amylases and protease (without preliminary vacuum drying).

^gNone detected. See also Table II.

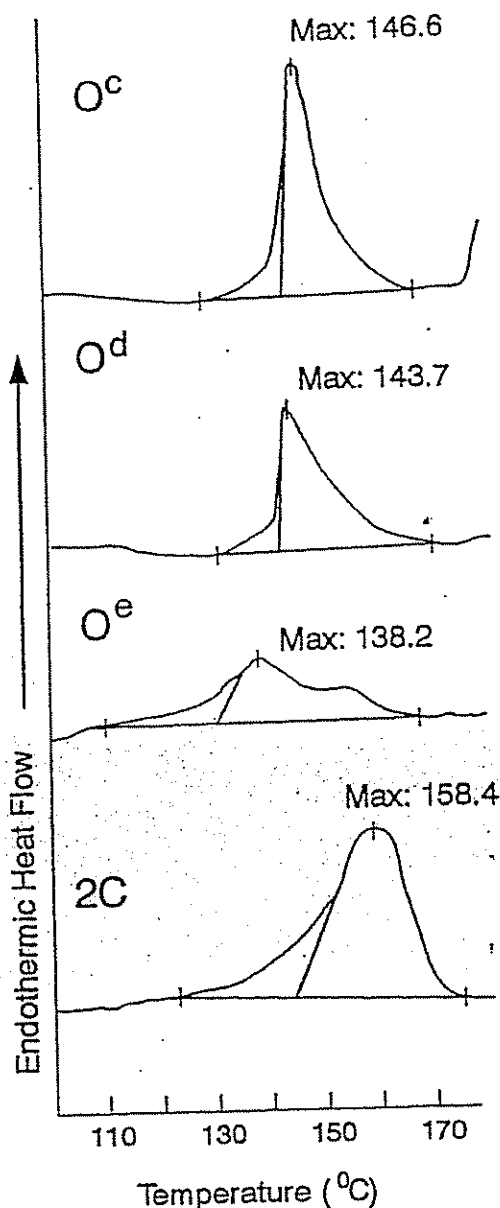


Fig. 2. Differential scanning calorimetric thermograms of the "apparent" and "true" resistant starch isolated from the purified white barley starch layer. O^c = residue obtained from starch dried under vacuum and heated with amylases, O^d = residue isolated from starch treated with amylases without preliminary vacuum drying, O^e = residue obtained from starch treated with amylases and protease without preliminary vacuum drying, 2C = resistant starch isolated after two autoclaving-cooling cycles. O = no autoclaving-cooling cycle.

Chemical Analyses

Protein was determined by the Kjeldahl nitrogen ($N \times 6.25$), Method 46-11A; ash by dry combustion, Method 08-01; moisture by oven drying 1 hr at 130°C , Method 44-15A; and free lipids by exhaustive extraction with petroleum ether, followed by evaporation to constant weight under vacuum, Method 30-25 (AACC 1983). Starch was determined essentially as described for DF (Prosky et al 1988). The starch was converted to glucose by successive treatments with bacterial α -amylase followed by protease and fungal amyloglucosidase. The glucose released was measured with a glucose oxidase-peroxidase reagent (Lloyd and Whelan 1969), and results were expressed on a polysaccharide basis (glucose $\times 0.9$). Quantification of amylose (as percent of starch) was done according to Hovenkamp-Hermelink et al (1988). All analyses were done at least in duplicate; average results of all analyses are given on a dm basis.

Differential Scanning Calorimetry

The thermograms from differential scanning calorimetry (DSC) were recorded with a Perkin-Elmer DSC-4 instrument fitted with a 3600 thermal analysis data station and a graphics plotter 2. An indium standard was used for temperature and energy calibration. Samples (10 mg; dm) were weighed into large-volume stainless steel capsules (Perkin-Elmer, No. 0319-0218). About 20 μl of distilled water was added, and the capsules were sealed by a quick press and allowed to equilibrate for 2 hr at ambient temperature. The samples were then heated from 20 to 180°C at a scanning rate of $10^\circ\text{C}/\text{min}$. A capsule with inert material (Al_2O_3) and water represented the reference sample. For each endotherm, initial (T_i), peak (T_p), and completion (T_c) transition temperatures were determined by a computerized system developed by the Perkin-Elmer Corp. The transition enthalpy (ΔH) was calculated from the peak area and expressed as joules per gram of dry matter. The values given are the means of three to four independent measurements.

Scanning Electron Microscopy

Samples of dried starches were evenly sprinkled on double-sided adhesive tape mounted on aluminum specimen holders. The samples were then coated with a thin layer of ionized gold by Technics Hummer V Sputtering and examined in a Hitachi S-570 scanning electron microscope at 20 kV.

RESULTS AND DISCUSSION

Isolated Starch

The yield and composition of purified starch layers obtained after centrifugation of starch suspensions from the covered high-amylose Glacier selection are presented in Table I. Values from the crude flour, nonpurified brown layer, and residue after starch isolation were included for comparison. The yields of starch in the purified white and crude brown layers were relatively low and averaged 19.4% of the dry kernel weight or 35.5% of the total starch in the grain. Recovery of 45% starch from the proteinaceous brown layer was achieved by enzymatic processing of tailings. Starch was the main component of both purified layers, in which its content reached 97-98%. The purified starch layers contained less than 1% protein and up to 0.3% ash and 0.6% free lipids. The percentage of amylose in the starch was 44.5 in the white layer and 47.9 in the brown layer; the difference was statistically significant at the 0.01 level. It should also be noted that relatively large amounts of starch (32%) remained in the residual material after starch isolation. Our results on amylose distribution in high-amylose barley starch granules differ from those of Stark and Yin (1986), who reported that small granules (brown layer) of regular (about 25% amylose) barley contained 4% less amylose than the large granules (white layer).

Characterization of Barley Starches by SEM and DSC

Figure 1 shows SEM micrographs of starch granules and other barley components. The purified brown starch layer was composed of a high percentage of small (2-5 μm in diameter) round granules

with only a few large (10–15 μm) lenticular granules visible (Fig. 1a); the white layer contained mainly large lenticular granules and a low proportion of small granules (Fig. 1b). The granule size, shape, and distribution appeared typical of normal barley starch, and the starch granules showed no apparent damage. The crude brown layer contained clusters of starch granules surrounded by a protein matrix (Fig. 1c). The residue after starch isolation represented a mixture of cell wall debris, protein fragments, and unreleased starch granules (Fig. 1d).

DSC data for isolated starchy materials are given in Table II. All preparations exhibited two prominent endothermic transitions over the temperature range of 50–120°C; the transitions corresponded to endotherms of starch gelatinization (54–87°C) and melting of the amylose-lipid complex (87–113°C). In both transitions, purified preparations attained much higher values of melting enthalpies than crude starch materials. Peak temperatures of starch gelatinization were much lower and melting enthalpies of both starch gelatinization and amylose-lipid complexes were higher in the purified starches than in the other materials (flour, crude brown layer, and residue). No significant differences in endothermic transition temperatures were observed between starches in the two purified starch layers. The mean peak temperatures and melting enthalpies were, respectively, 66.6°C and 10.6 J/g for starch gelatinization and 103.5°C and 3.7 J/g for amylose-lipid complexes. The values obtained are comparable to the data reported previously for barley starch by Bhaty and MacGregor (1988).

Resistant Starch from Barley

The purified high-amylose barley starches were then used for the formation, isolation, and characterization of RS. As stated previously, the isolated starches were examined by DSC over the range of 20–180°C.

In the temperature range of 116–177°C, no transition could be observed in native, ungelatinized starches (Table III). However, the same starch treated with amylases without an autoclaving-cooling cycle yielded 4.1% of material, which was assayed as RS. It exhibited an endothermic transition in the general RS region but with a lower peak temperature and melting enthalpy. The results suggested that some RS may be formed during the analytical procedure. According to some reports, substantial amounts of RS may be formed during freeze-drying of the product before analysis (Englyst et al 1982).

Two transition ranges were recorded: around 55°C (probably uncomplexed lipid) and around 155°C (enzyme-resistant starch) (Tables III and IV). In light of the possibility of RS formation during the analytical procedure, a series of controls in addition to the native pure starch was included: starch dried under vacuum and heated with amylases, starch treated with amylases without preliminary vacuum drying, and starch treated with amylases and protease without preliminary vacuum drying.

Table III and Figure 2 indicate the possible formation of RS

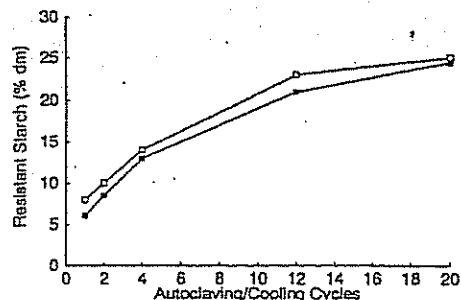


Fig. 3. Effect of repeated autoclaving-cooling cycles on yields of resistant starch from purified white (□) and brown (■) starch layers isolated from covered Glacier high-amylose barley.

in isolated starch that did not undergo the autoclaving-cooling process. The yield of such "RS" was highest in starch dried under vacuum and treated with amylases. The yield decreased in samples treated with amylases without preliminary vacuum drying and decreased still further in samples treated with both amylase and protease without preliminary vacuum drying. Further examina-

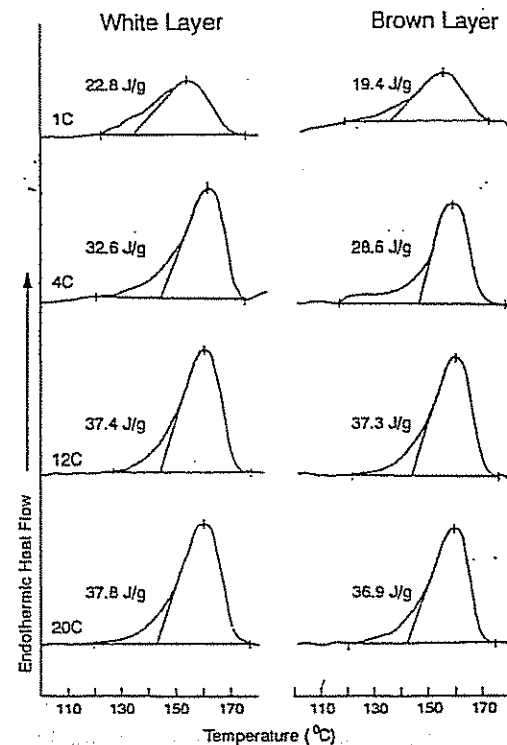


Fig. 4. Differential scanning calorimetric thermograms of vacuum-dried resistant starch isolated from purified white and brown barley starch layers after one, four, 12, and 20 autoclaving-cooling cycles (C). Starch-water ratio = 1:5, autoclaving temperature = 121°C.

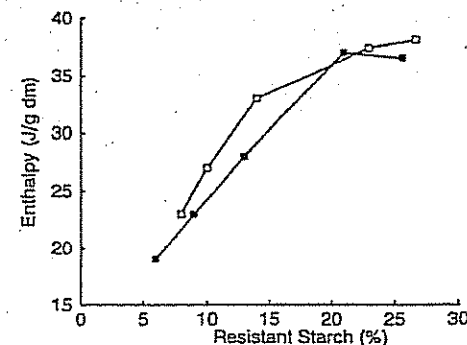


Fig. 5. Plot of enthalpy values of resistant starch versus yields of resistant starch from purified white (□) and brown (■) starch layers isolated from covered Glacier high-amylose barley.



Fig. 6. Scanning electron micrographs of vacuum-dried resistant starch isolated from: amylo maize VII starch after one autoclaving-cooling cycle 'C' (a), purified white barley starch layer after one C (b), purified white barley starch layer after four C (c), purified brown barley starch layer

tion of the results (second transition) shows, however, that the four control samples (those with no autoclaving-cooling cycles) showed no peak enthalpy around 155°C, the most reliable criterion of RS formation (Fig. 2). Thus, the presence of RS should be established by the enzymatic-gravimetric method and confirmed by DSC of the 155°C peak.

As in the formation of RS from high-amylo maize starch (Sievert and Pomeranz 1989), an increase in the number of autoclaving-cooling cycles increased the yield of RS and its enthalpy. Similar results were obtained as a result of RS formation from the purified brown starch layer (Table IV). Increasing the number of cycles up to 20 raised the RS level from 6 to 26% (Fig. 3). Comparison of Tables III and IV shows that the RS preparations isolated from the two starch layers showed similar thermodynamic properties. They exhibited an endothermic transition in the temperature range of 116–177°C with a mean peak temperature at 158°C, probably due to dissociation of the crystalline structures of amylose. The melting temperature of recrystallized amylose was estimated at about 160°C (Biliaderis et al 1985, Ring et al 1987). Figure 4 illustrates the thermal profiles of RS isolated from white and brown starch layers after one to 20 autoclaving-cooling cycles. Differences in melting enthalpy values (about 3.4–4.0 J/g) were found between both layers after one and four cycles. The differences became smaller when the number of autoclaving-cooling cycles increased. The lower melting enthalpy values obtained for the brown starch layer could be attributed to the higher amylose content (over 3%) in small starch granules (brown layer) compared with that in the white starch layer. At 121°C, the partially ungelatinized brown starch layer yielded lower melting enthalpies than did the large granules in the white starch layer (Table II), particularly in RS isolated after one to four autoclaving-cooling cycles (Table IV). The thermograms in Figure 4 also show lower peak temperatures and broader peaks of melting enthalpy for RS residues isolated after one cycle than for those isolated after four to 20 cycles. The broader peaks probably reflect less organized crystalline structures, which require lower energies for the melting process. Our thermoanalytical results on retrograded barley starch are also in good agreement with those reported for other cereals such as amylo maize or wheat (Sievert and Pomeranz 1989, Siljeström et al 1989).

The data in Tables III and IV show that an increase in the number of autoclaving-cooling cycles was also associated with an increase in melting enthalpies. This increase was found only up to the 22% RS level, which was achieved by 12 repeated autoclaving-cooling cycles. Further cycles increased RS yield while the melting enthalpies remained constant (Fig. 5). The data suggest that changes in the quality of RS take place during autoclaving-cooling cycles. The plateau of the curves in Figure 5 probably reflects a limit of crystallization of RS structures formed under the conditions applied.

The vacuum-dried RS preparations exhibited an additional small thermal transition in the range from 37 to 66°C (Tables III and IV), which gradually disappeared as the number of autoclaving-cooling cycles increased. Similar observations were previously reported by Sievert and Pomeranz (1989) for vacuum-dried RS preparations obtained from amylo maize starch. It is not clear whether this thermal effect is derived from retrograded amylopectin, the association of which can be reversed by heating to about 70°C (Eliasson 1985, Zeleznak and Hosney 1986), or whether other factors are involved in formation of this peak.

Amylose-lipid complexes that reach an endothermic transition at about 100°C ($\pm 20^\circ\text{C}$) (Kugimiya et al 1980, Biliaderis et al 1985) could not be detected in RS residues. This can be related to the use of the thermostable bacterial α -amylase for enzymatic isolation of RS. This enzyme has been shown to hydrolyze amylose-lipid complexes at high temperatures (Holm et al 1983).

Figure 6 shows SEM micrographs of RS preparations obtained from amylo maize VII starch and purified white and brown barley starch layers after one to four autoclaving-cooling cycles. The enzyme-resistant starch showed a completely different image than that of regular starch. The granular structure disappeared, and bigger, irregularly shaped particles were visible. Amylo maize VII

T. J. EV
Calculated Enthalpies*

Number of Cycles	Calculated Enthalpy in Brown/White Layer (%)	
	White Layer	Brown Layer
1	1.78	1.13
2	2.62	1.96
4	4.63	3.69
12	8.68	8.02
20	9.79	9.41

* Yield of resistant starch, percent dry matter multiplied by enthalpy (in J/g).

RS residues obtained after one cycle formed an open, fluffy structure (Fig. 6a), while in RS preparations isolated from barley starch more compact forms predominated (Fig. 6b–e). In RS preparations obtained from white and especially brown starch layers after one cycle, small particles of residual starch granules were still evident in some parts of the material (Fig. 6b and d). After four autoclaving-cooling cycles, very compact and dense structures could be observed in RS derived from both starch layers (Fig. 6e and c). The higher melting enthalpy of barley RS after four cycles compared with that after one cycle might be related to the structural changes and stabilization.

Czuchajowska et al (1991) introduced the term "calculated enthalpy" for the yield of RS (% dm) multiplied by the enthalpy (J/g) of the 155°C endotherm of RS. This theoretical value was used to take into account the effectiveness of different enzymes to isolate crystallized amylose from a starch sample and to deduce the amount of energy required to melt an isolated RS. The term can also be used to compare the yields and melting enthalpies from maize and barley or from large and small barley starch granules or the effects of numbers of autoclaving-cooling cycles. After 20 autoclaving-cooling cycles, the yields were 42 and 26%, and the melting enthalpies 29 and 38 J/g, for RS in amylo maize VII and high-amylose barley, respectively; the corresponding calculated enthalpies were 12.2 and 9.9, respectively. Calculated enthalpies were consistently lower in RS for the brown layer than for the white layer (Table V). The difference in calculated enthalpies in RS for the two layers decreased, however, as the number of autoclaving-cooling cycles increased.

CONCLUSIONS

"Apparent" enzyme-resistant starch in high-amylose barley starch can be distinguished from "true" RS by its peak enthalpies, which are below -155°C . Increasing the number of autoclaving-cooling cycles increased both the yield and the melting enthalpy of RS (the same as in high-amylose maize). The maximum yield was higher and the melting enthalpy at -155°C was lower in RS from maize than in RS from barley. Yields, enthalpies, and "calculated enthalpy" (yield \times enthalpy) were higher in RS from large starch granules (white layer) than in RS from small starch granules (purified brown layer). The differences decreased as the number of autoclaving-cooling cycles increased.

ACKNOWLEDGMENT

The financial support of the Washington Barley Commission, Spokane, to J. Szczodrak for postdoctoral research work at Washington State University is gratefully acknowledged.

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Vol. 68, No. 6, 1991 595

% RS < % amylose. Hence this part not applicable to CI 16
However no disclosure of % composition of dietary fiber.

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**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/374,645	04/27/95	MCNAUGHT	K 1451-007PCT

 12M1/0922
 LOWE PRICE LEBLANC & BECKER
 99 CANAL CENTER PLAZA SUITE 300
 ALEXANDRIA VA 22314

EXAMINER	
NUTTER, N	
ART UNIT	PAPER NUMBER
1207	17
DATE MAILED: 05/22/97	

 This is a communication from the examiner in charge of your application.
 COMMISSIONER OF PATENTS AND TRADEMARKS

**SUPPLEMENTAL
NOTICE OF ALLOWABILITY**

All claims being allowable; PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

- ☒ This communication is responsive to 22 July 1997
- ☒ The allowed claim(s) is/are 9-11, 13-17 and 20-29
- ☐ The drawings filed on _____ are acceptable.
- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

- ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
- ☒ Applicant MUST submit NEW FORMAL DRAWINGS
- ☐ because the originally filed drawings were declared by applicant to be informal.
- ☒ including changes required by the Notice of Draftperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. 11.
- ☐ including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.
- ☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftperson.

- ☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

- ☐ Notice of References Cited, PTO-B92
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 16
- ☐ Notice of Draftperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Interview Summary, PTO-413
- ☐ Examiner's Amendment/Comment
- ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
- ☐ Examiner's Statement of Reasons for Allowance

 NATHAN M. NUTTER
 PRIMARY EXAMINER
 GROUP 1200

Docket No.: 1451-007

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : OFFICIAL DRAFTSMAN
Kenneth J. McNAUGHT et al : BATCH NO. 063
Serial No. 08/374,645 : Group Art Unit: 1207
Filed: April 27, 1995 : Allowed: 6/24/97
For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS : Examiner: N. Nutter

RECEIVED
LETTER SUBMITTING FORMAL DRAWINGS Division

Honorable Commissioner of
Patents and Trademarks
Washington, D. C. 20231

SEP 05 1997

08

Sir:

In response to the Notice of Allowability dated June 24, 1997, submitted herewith are four (4) sheets of Formal Drawings in connection with the above referenced application.

Respectfully submitted,
LOWE, PRICE, LEBLANC & BECKER

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Facsimile: 703-684-1124

08/374,645

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APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	102

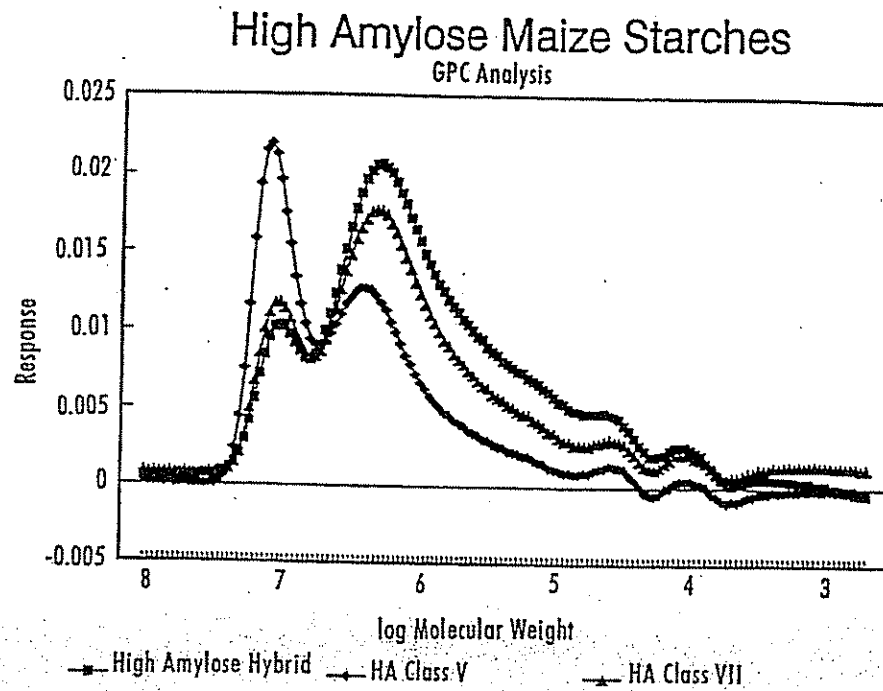
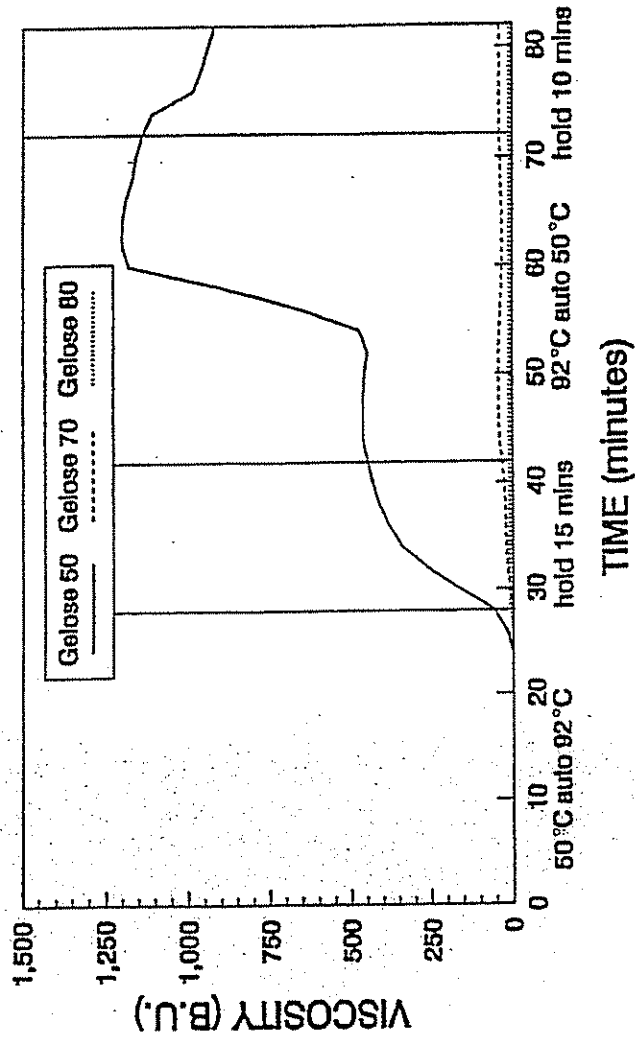


FIG. 1

APPROVED	OG P.E.
BY	CLASS
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GELOSE VISCOGRAPHS **IN WATER**



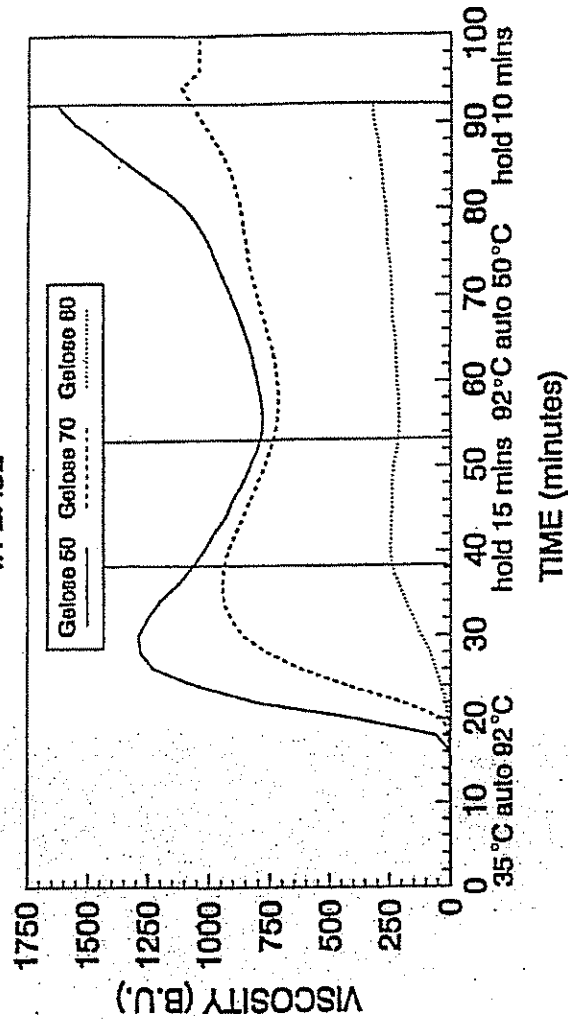
VISCOGRAPH PROGRAMME
8% dsb in water; 250 cmg; plus; 50 °C auto 92 °C
hold 15 mins auto 50 °C hold 10 mins

FIG. 2

APPROVED	O.G. FIG.
BY	CLASS / SUBCLASS
DRAFTSMAN	

GELOSE COMPARISONS

IN BASE



VISCOGRAPH PROGRAMME:
 6% dsb in 0.1M Sodium Hydroxide (NaOH); 250 cmg;
 pins; 36°C auto 92°C hold 15 mins auto 35°C

FIG. 3

Total Dietary Fibre Content of High Amylose Maize Starch Fractions
High Amylose 80 (10/91)

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	

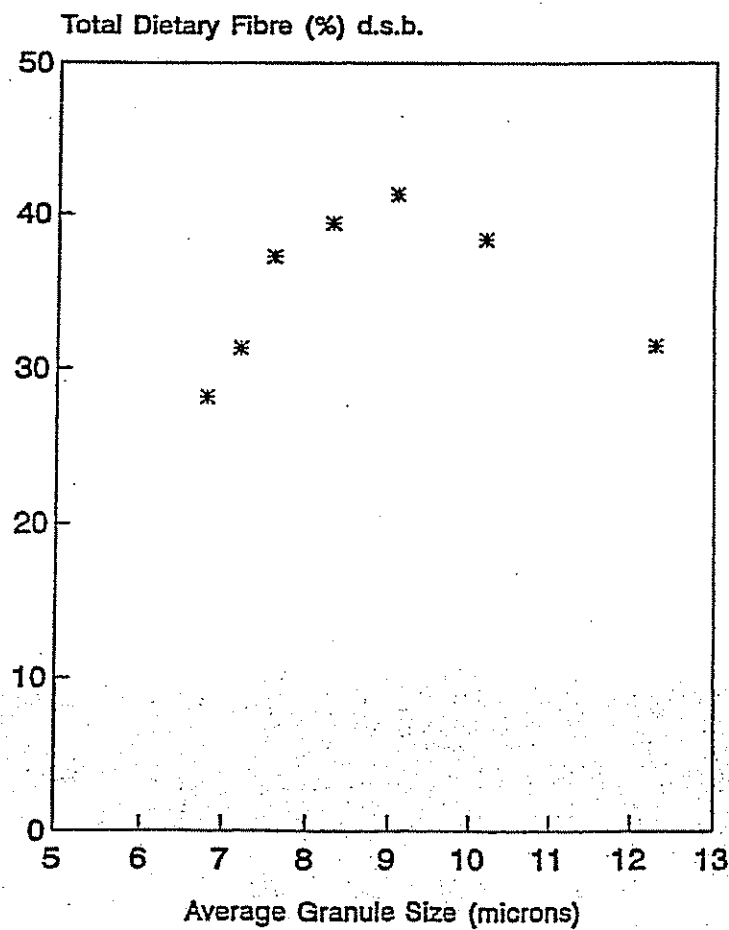


FIG. 4

The
United
States
of
America



Form PTO-1584 (Rev. 2/97)

PTO UTILITY GRANT

Paper Number 19

The Commissioner of Patents
and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to an statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

Bruce Lehman
Commissioner of Patents and Trademarks
Candra Morton
Assistant

(RIGHT INSIDE)

SENT BY:LOWE PRICE ...

10-98 13:51

LOWE PRICE

3053599:# 4/ 5

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Docket No.: 1451-007

FEB 10 1998

GROUP 1100

#20/E
PATENT (312)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Kenneth J. McNAUGHT et al
Serial No. 08/374,645
Filed: April 27, 1995
For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

BATCH NO. 063
Group Art Unit: 1804
Allowed: June 24, 1997
Examiner: N. Nutter

PETITION AND AMENDMENT UNDER 37 CFR 1.312

The Assistant Commissioner
for Patents and Trademarks
Washington, D. C. 20231

Sir:

Please amend the above-identified application as follows:

IN THE CLAIMS:

Please cancel claims 9-11, 13-15, 24 and 25.

REMARKS

Petition is hereby made to cancel claims 9-11, 13-15, 24 and 25 from this application in accordance with 37 CFR 1.312(b). It is requested that these claims be deleted and the application allowed to proceed to patent with the remaining claims 16, 17 and 26-29. Please charge the petition fee in the amount of \$130.00 to deposit account 12-2237.

Cancellation of these claims and grant of this petition is necessary to ensure the validity of all claims in the patent. After

108-518-5499

SENT BY:LOWE PRICE ...

-10-98 ; 13:51 ;

LOWE PRICE *

3053599:# 5/ 5

Serial No. 08/374,645

payment of the issue fee, applicants discovered there is additional prior art that may be relevant to the patentability of these cancelled claims 9-11, 13-15, 25 and 25; which relate to a different invention from claims 16, 17 and 26-29 (which remain in this allowed application. It is believed that this additional prior art is not relevant to the patentability of the remaining claims in this application because these remaining claims are patentably distinct from these cancelled claims. Accordingly, applicants petition to be permitted to cancel claims 9-11, 13-15, 24 and 25 and reserve the right to present these cancelled claims in a Divisional application along with this new, possibly relevant prior art .

For these reasons, it is submitted that this petition should be granted and such action is requested. It is believed that the above petition and fee therefore are correct. However, if additional fee is required, kindly charge the same to the undersigned attorney's deposit account number 12-2337.

Respectfully submitted,
LOWE, PRICE, LEBLANC & BECKER


Michael G. Glaman
Registration No. 19,114

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 MGG:ajb
Date: November 4, 1997
Facsimile: 703-684-1124

SENT BY:LOWE PRICE ...

2-10-98 ; 18:50 ;

LOWE PRICE ...

3059599;# 1/ 5

FAX COPY RECEIVED

FEB 10 1998

GROUP 1100

FAX INFORMATION
McDERMOTT, WILL & EMERY
SUITE 300
99 CANAL CENTER PLAZA
ALEXANDRIA, VIRGINIA 22314
(703) 518-5100
FAX: (703) 684-1124

DATE: February 10, 1998

TO:

NAME: Mr. Ted Morris

FIRM: U.S. Patent and Trademark Office

LOCATION:

FAX NUMBER: 703-305-3599

NUMBER OF PAGES (Including cover): 5

FROM:

NAME: Robert L. Price

RE:

Your Reference: U.S. Serial No. 08/374,645

Our Reference: 50179-024 (1451-007)

Special Instructions: PLEASE DELIVER TO MR. MORRIS ASAP. HE IS HOLDING FILE. THIS AMENDMENT WAS FILED ON NOVEMBER 5, 1997 BUT NEVER ENTERED INTO THE FILE.

Original will be sent to you: No ☒ X
Yes (via mail/air mail) ☐

IMPORTANT

The information contained in this facsimile is intended only for the use of the individual or entity to whom it is addressed. If you are not the intended recipient, you are hereby notified that any use, dissemination, distribution or copying of this communication is strictly prohibited. If you have received this facsimile in error, please immediately notify us by telephone, and return the original message to us at the address above via the U. S. Postal Service. Thank you.

For confirmation or assistance call (703) 518-5100 and ask for: Kathy

SENT BY:LOWE PRICE ...

-10-98 : 13:50 :

LOWE PRICE

9055599:# 2/ 5

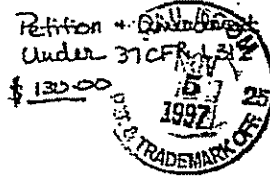
FAX COPY RECEIVED

FEB 10 1998

GROUP 1100

The Patent Office acknowledges, and has stamped hereon, the date of receipt of the items checked:

	<input type="checkbox"/> SMALL ENTITY	Fee (\$)
Doc. No. <u>1451-007</u>	() Information Disclosure Statement W/PTO 1449 and References	
Serial No. <u>08/374,645</u>	() Assignment and Fee	
Applicant <u>McDougal et al.</u>	() Certified Priority Doc.(s)	- 0 -
	() Response to Restrict./Elect. Req.	- 0 -
	() Amendment	
	() Supplemental/Substitute Declaration	- 0 -
	() Request for Approval of Drawing Revisions	- 0 -
	() Notice of Appeal and Fee	
	() Appeal Brief (3 copies) and Fee	
	() Reply Brief (NO FEE)	- 0 -
	() Extension of Time _____ mos.	
	() Terminal Disclaimer and Fee	
	() Formal Drawings _____ Sheets	- 0 -
	() Issue Fee	
	() Request for File Wrapper _____ Appl	
	Under P.C. 1.62	
	() _____	
		Total Fee <u>130.00</u>
<input type="checkbox"/> Charge to Deposit Account _____	<input type="checkbox"/> Charge to Deposit Account 12-2237	Initials <u>me/ab</u>



SENT BY: LOWE PRICE ...

10-88 : 19:50 :

LOWE PRICE

30535393/# 3/ 5

Docket No.: 1451-007

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

FAX COPY RECEIVED

BATCH NO. 063

Kenneth J. McNAUGHT et al

FEB 10 1998

Serial No. 08/374,645

Group Art Unit: 1804
Allowed: June 24, 1997
Examiner: N. Nutter

Filed: April 27, 1995

GROUP 1100

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

THE ASSISTANT COMMISSIONER
FOR PATENTS AND TRADEMARKS
Washington, D. C. 20231

Dear Sir:

Transmitted herewith is a Petition and Amendment Under 37 CFR 1.312 in the above identified application.

☐ No additional fee is required.☐ Also attached:

The fee has been calculated as shown below:

	NO. OF CLAIMS	HIGHEST PREVIOUSLY PAID FOR	EXTRA CLAIMS	RATE	FEE
Total Claims	8	20	0	x \$22 =	0
Independent Claims	2	3	0	x \$82 =	0
If multiple claims newly presented, add \$270.00					
Fee for extension of time					
Petition Fee					\$130.00
TOTAL FEE DUE					130.00

- [X] Please charge my Deposit Account No. 12-2237 in the amount of \$130.00. An additional copy of this transmittal sheet is submitted herewith.
- [X] The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment, to Deposit Account No. 12-2237, including any filing fees under 37 CFR 1.16 for presentation of extra claims and any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,

LOWE, PRICE, LEBLANC & BECKER

Michael G. Gilman

Registration No. 19,114

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 684-1111 MGG:ajb
Date: November 4, 1997
Facsimile: 703-684-1124

Docket No.: 50179-024 (1451-007)

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :
Kenneth J. McNAUGHT et al : ATTN: Antonion Johnson
Serial No. 5,714,600 : CERTIFICATE OF
Filed: February 3, 1998 : CORRECTIONS
: Crystal Park 3, RM 918

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

REQUEST FOR REISSUANCE OF DEED OF LETTERS PATENT

Honorable Commissioner of Patents and Trademarks
Washington, D. C. 20231

Sir:

Surrendered herewith is the original Deed of Letters Patent for U.S. Patent No. 5,714,600 wherein the claims contained therein are incorrect. The claims issued should have taken into account Applicants' Amendment of November 5, 1997 cancelling claims 9-11, 13-15, 24 and 25. Attached herewith are a Request for Certificate of Correction Under 37 CFR 1.322 and Form PTO 1050 outlining the claims as they should appear in the Deed of Letters Patent for the convenience of the Office.

Respectfully submitted,

McDERMOTT, WILL & EMERY

Robert L. Price
Robert L. Price
Registration No. 22,685

99 Canal Center Plaza, Suite 300
Alexandria, Virginia 22314
(703) 518-5100 RLP:kmb
Date: March 13, 1998
Facsimile: 703-684-1124

APPROVED
Mary H. Humphrey
MAY 20 1998
FOR THE PAT. & T.M.

NOTICE RE: CERTIFICATES OF CORRECTION

DATE : 4/29/98 #22
 TO : Supervisor, Art Unit 1207
 SUBJECT : Certificate of Correction Request in Patent No. 5,714,600

A response to the following question(s) is requested with respect to the accompanying request for a certificate of correction.

- ☐ 1. Would the change(s) requested under 37 CFR 1.323 constitute new matter or require reexamination of the application?
- ☐ 2. Would the change(s) requested under 37 CFR 1.323 materially affect the scope or meaning of the claims allowed by the examiner in the patent?
- ☐ 3. Applicant disagrees with change(s) initiated and dated by Examiner in lieu of an Examiner's Amendment. Should the change request be granted?
- ☐ 4. With respect to the change(s) requested, correcting Office errors, should the patent read as shown in the certificate of correction?
- ☒ 5. If the amendment filed 3/2 had been considered by the Examiner, would the amendment have been entered?

PLEASE RESPOND WITHIN 7 DAYS AND RETURN THE FILE TO
 ROOM 918, PK III

RUSH

May Slipp
 Legal Instrument Examiner

TO: CERTIFICATE OF CORRECTION BRANCH

DATE:

The decision regarding the change(s) requested in the certificate of correction is shown below.

- | | | |
|--|-----------------------------|---|
| <input type="checkbox"/> 1. YES | <input type="checkbox"/> NO | <input type="checkbox"/> Comments below |
| <input type="checkbox"/> 2. YES | <input type="checkbox"/> NO | <input type="checkbox"/> Comments below |
| <input type="checkbox"/> 3. YES | <input type="checkbox"/> NO | <input type="checkbox"/> Comments below |
| <input type="checkbox"/> 4. YES | <input type="checkbox"/> NO | <input type="checkbox"/> Comments below |
| <input checked="" type="checkbox"/> 5. YES | <input type="checkbox"/> NO | <input type="checkbox"/> Comments below |

☐ Comments _____

[Signature]
 Supervisor

1717
 Art Unit

5714,600

RTC COB.C



Docket No.: 50179-024

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Kenneth J. MCNAUGHT, et al.

Serial No.: 08/374,645

Filed: April 27, 1995

For: HIGH AMYLOSE STARCH AND RESISTANT STARCH FRACTIONS

Group Art Unit: 1207

Examiner: N. Nutter

DATE

MAR 25 2002

OF CORRECTION

#23
OL

REQUEST FOR CORRECTED CERTIFICATE OF CORRECTION

Commissioner for Patents
Washington, DC 20231

Sir:

When U.S. Patent 5,714,600, was issued on February 3, 1998, the patent contained 18 claims. However, certain claims had been unintentionally included in the patent even though those claims had been cancelled from the application by amendment.

When the error was realized, the U.S. Patent & Trademark Office was contacted and we were instructed by the director of Group 1100 to file a Certificate of Correction in accordance with his Memorandum dated March 10, 1998. Enclosed is one copy of that Memorandum from the Group Director Theodore Morris, and one copy of the request for Certificate of Correction filed March 12, 1998.

When the Certificate of Correction issued however, it was noted that the certificate used the claim numbers as they existed in the application and not as the claim numbers existed in the final printed patent. As a result, this has led to substantial confusion in determining the claims which are actually in force in U.S. patent 5,714,600.

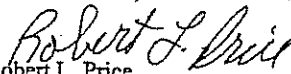
Serial No.: 08/374,645

To correct this problem, Applicants request that the original Certificate of Correction issued in U.S. Patent 5,714,600, be canceled and replaced by a new Certificate of Correction which properly refers to the claims as they are numbered in the patent. Submitted herewith is a Certificate of Correction to accomplish this purpose. Basically, the Certificate of Correction request's deletion of the previous Certificate of Correction and issuance of a new Certificate of Correction in which patent claims 1-8 are deleted. The patent should contain only claims 9-18.

Since the Certificate of Correction is necessary for the public's understanding as to the claims in force in U.S. Patent 5,714,600, it is believed that the Certificate of Correction should be granted. Please charge the fee for the Certificate of Correction to Deposit Account 500417.

Respectfully submitted,

McDERMOTT, WILL & EMERY


Robert L. Price
Registration No. 22,685

600 13th Street, N.W.
Washington, DC 20005-3096
(202)756-8000 RLP:jdj
Facsimile: (202)756-8087
Date: March 21, 2002

Stipple
Here
Only!

PRINTED/6 TRIM LINE

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION


PATENT NO. : 5,714,600
DATED : February 3, 1998
INVENTOR(S) : Kenneth J. McNAUGHT et al

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Please enter the following corrections since the office failed to timely match the amendment dated November 5, 1997:

--Cancel claims 9-11, 13-15, 24 and 25--.

The Final Order of the claims should be:

1. 15
 2. 17
 3. 20 depends 1
 4. 21 depends 2
 5. 22 depends 1
 6. 23 depends 1
 7. 26 depends 2
 8. 27 depends 7
 9. 28 depends 8
 10. 29 depends 9
- 

MAILING ADDRESS OF SENDER:

McDERMOTT, WILL & EMERY
99 Canal Center Plaza, Suite 300
Alexandria, VA 22314

PATENT NO. 5,714,600

No. of add'l copies
@ 50¢ per page



NOTICE RE: CERTIFICATES OF CORRECTION

DATE : 04/25/02 Paper No.: 24

TO : Supervisor, Art Unit 1700 ~~1700~~ *Nutter*

SUBJECT : Certificate of Correction Request in Patent No.: 5714600

A response to the following question is requested with respect to the accompanying request for a certificate of correction.

With respect to the change(s) requested, correcting Office and/or Applicant's errors, should the patent read as shown in the certificate of correction? No new matter should be introduced, nor should scope or meaning of the claims be changed.

Halt

PLEASE COMPLETE THIS FORM AND
RETURN WITH FILE, WITHIN 7 DAYS,
TO CERTIFICATES OF CORRECTION BRANCH - PK 3-915/922
PALM LOCATION 7580 - TEL. NO. 305-8309

THANK YOU FOR YOUR ASSISTANCE!

Note your decision, regarding the changes requested in the Request for Certificate of Correction, placing a check mark (+) in the box that reflects your decision, which corresponds to the question check above.

☒ YES ☐ NO ☐ Comments below

Nutter

☐ Comments:

[Signature]
Supervisor

1711
Art Unit

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 5,714,600
DATED : February 03, 1998
INVENTOR(S) : Kenneth J. McNaught et al.

Page 1 of 1

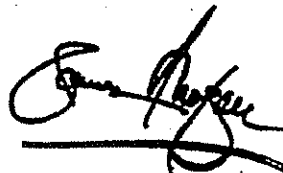
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 9-10,
Lines 19-45, cancel claims 1-8.

Signed and Sealed this

Twenty-third Day of July, 2002

Attest:

A handwritten signature in black ink, appearing to read "James E. Rogan", is written over a horizontal line.

Attesting Officer

JAMES E. ROGAN
Director of the United States Patent and Trademark Office